

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
NATIONAL APPLIED RESOURCE SCIENCES CENTER  
DENVER FEDERAL CENTER, BUILDING 50  
P.O. BOX 25047  
DENVER, COLORADO 80225-0047

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EMS TRANSMISSION 11/17/99  
Information Bulletin No. RS-2000-021

To: All Field Officials

From: Director, National Applied Resource Sciences Center

Subject: Site Characterization for Abandoned Mine/Mill Sites,  
Modification 1

## 1.0 Introduction

The purpose of this Information Bulletin (IB) is to provide additional technical guidance for characterizing abandoned mine sites with the goal of remediating or reclaiming the site. The IB focuses on characterizing releases of hazardous substances in surface water and soils, assessing risk, and collecting information for design of the remedy. The previous IB was issued on July 14, 1999, by the National Applied Resource Sciences Center (NARSC).

This modification incorporates important recent changes in two areas. First, Environmental Protection Agency (EPA) has recently changed its water quality criteria for a number of metals. Table 2 from the original IB shown below incorporates these changes and gives the full reference. Second, since mercury is an important contaminant at many Abandoned Mine Land (AML) sites and since mercury is an environmental threat via fish bioaccumulation at very low concentrations, EPA has recently published a far superior method (Method 1631) for mercury determination in water with a detection limit of 0.0005 ug/L. This method is several orders of magnitude lower than the 245.1 method cited in the previous IB. For more information on the method, see [www.epa.gov/ost/Methods/mercury/1631.html](http://www.epa.gov/ost/Methods/mercury/1631.html).

Recent risk assessment work has indicated that fish-eating birds and mammals may have adverse effects when mercury in water is in the range of 0.0006 ug/L total mercury or 0.00005 ug/L methylmercury.

These are obviously extremely low concentrations. Furthermore, human receptors may be at risk in consuming fish caught in waters in sub-ug/L concentrations of mercury. Therefore, it is essential to use the new analytical method for mercury, Method 1631. In evaluating results, use of the old mercury criterion of 0.012 ug/L is preferred over the newer criterion of 0.77 ug/L as the new criterion is not protective if methylmercury (the form of mercury bioaccumulated in the food chain) is present.

Sample collection must be performed with extreme attention to contamination control. The laboratory will provide special sample fluoropolymer bottles with preservatives, gloves, blank water, and other special instructions. Coordinate closely with the laboratory before sampling. The cost per sample is \$70-100.

Table 2. Recommended Analytical Methods for Dissolved Metals in Water

Metal	+Recommended Water Quality Criterion (ug/L) (100 mg/L hardness)	EPA Analytical Method	Method Detection Limit (ug/L)
Antimony	NA	200.8 or 200.9	0.4 or 0.8
Arsenic	150	200.9	0.5
Cadmium	2.2	200.13	0.016
Copper	9.0	200.10	0.023
Lead	2.5	200.10	0.074
Mercury	<b>0.77*</b>	<b>1631</b>	<b>0.0005</b>
Nickel	52	200.9 or 200.9	0.5
Selenium	5	200.9	0.6
Silver	3.4	200.8	0.1
Thallium	NA	200.8	0.3
Zinc	120	200.7 or 200.8 or 200.9	0.2-2.0

+Source: National Recommended Water Quality Criteria - Correction, April 1999  
EPA822-Z-99-001.

\*The old criterion was 0.012 ug/L. EPA states this criterion may not be protective if methylmercury is present. Therefore, use of the old criterion for assessment is recommended.

Please note that many commercial environmental laboratories are not capable of using this method. If you have any questions concerning this IB, please contact Karl Ford, 303-236-6622, or Bill Carey, 303-236-0103, of NARSC.

Signed by:  
Lee Barkow, Director  
National Applied Resource Sciences Center

Authenticated by:  
Elsie Pacheco  
Staff Assistant

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